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The Acquisition of Innovation in Times of Recession

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Abstract

This paper provides a fundamental understanding of the importance of mergers and acquisitions in an always-changing business environment by referring to the Portuguese economy. It analyzes and evaluates an acquisition of a small innovative firm offering customer-specific trainings by a mid-size human resource consulting firm intending to build up competitive advantages in times of recession. Research was conducted to indicate the framework and process of acquisitions, and to learn about different approaches of valuation models that is then applied to a practical valuation case. Results obtained imply that the target is underpriced since the valuation result provided by the target's management deviates a lot and therefore entails an observation of the provided valuation.

Keywords: Valuation, Mergers and Acquisition, innovative business models.

1. Introduction

Mergers and acquisitions have always been topics of interest in the financial sector. Nowadays, the growing economical importance of mergers and acquisitions is, amongst other aspects, caused by increasingly competitive markets, cheap debt and the urge to overcome a slowing economy (Achim, 2015). Consequently, researchers introduced innovative business ideas and models that offer high potential to defeat this barrier (Lynch, 2013 and Rae, 2015), such as Click Travel that overcame fierce competition in the business travel management market by introducing IT systems and supplier relationships that provide cost savings above competitors and passes those savings to its clients, allowing the firm to raise its market share during recession and to double its revenue (www.clicktravel.com).

The valuation of companies and securities are key components in M&A transactions (Ballwieser, 2011). To familiarize the reader with the environmental and theoretical aspects concerning the acquisition evaluation of the acquired target company section 2 provides a brief overview of the development of the Portuguese environment and section 3 elaborates fundamental knowledge about M&As.

Especially in case of a company takeover, it is crucial to work out a valuation that incorporates all environmental factors influencing the current value of future uncertain income streams (Ballwieser, 2011). Most prevalent ones are the discounted cash flow (DCF) models that discount future cash flows at constant discount rates, including an adjustment for risk (Luehrman, 1998), outlined in section 4. After a review of the sentinel concepts, the valuation case and ample background information, about a small innovative training firm acquired by a midsize HR consulting, firm is introduced. Subsequently, chapter 6 combines the application of the aforementioned theories and delivers a substantiated valuation estimate for the target. Due to a large divergence of the value proposition in this paper and the value estimate of the data provided, a critical input data evaluation of the valuation process is

outlined in section 7. Based on the lack of sufficient studies about the private M&A market and cases in Portugal, this paper intends to reveal common shortcomings in valuations arising in practice and concludes with an overview of key findings, draws implications for academia and practitioners, and identifies limitations of this research.

2. The Economic Position and Business Environment in Portugal between 2008 and early 2015

Starting the second quarter of year 2013, Portugal's austerity-battered economy is slowly recovering after three years of recession. This recession was reinforced by tax increases, public spending cuts, shrinking global economy and demand (Wiese, 2014).

In 2012 Portugal's budget deficit amounted to -5.7 % of GDP and fell, above expectations to -4.8 % in 2013. After two years of decrease, the deficit increased again in 2014 to -7.2 % of GDP. For comparison, in 2014 the average government deficit of the Euro countries amounted to -2.6 %.[1] Portugal's target deficit for 2015 is anchored to -2.7 % of GDP; however, the IMF predicts that an improvement of budget deficit might only be reached, unless more government spending cuts are introduced. In May 2014, Portugal was able to exit from its bailout by international lenders.[2]

Portugal is still regarded to face the highest credit risk in Europe after Greece. Thus, public debt is still increasing to 130 % of GDP, which reflects in real terms a public debt increase of 2.9 % in 2014.[3] The effects of the global economic crisis, and the Portuguese recession, which only ended in late 2014, are still slowing down the recovery process of Portugal's economy.[4] In early 2015, Portugal started with early repayments on the loan it obtained from the IMF in

[1] Eurostat (2015).
[2] BMI Research (2015).
[3] Passport (2015).
[4] Wiese (2014).

2011. Therefore, investor confidence in the market increased and contributed to Portugal's economic improvements, such as an upgrading of one of Portugal's largest business groups (EDP S.A.) to investment grade status, enabling the company to sell bonds and reduce its notable debt level.[5] This is of major importance since the economic situation restrains the incentive of new investments and company formation (Robinson and Zerdin, 2013). In order to fight the increasing barriers of growth opportunities, firms tend to opt for inorganic growth in which expansion and the gain of access to further resources and capabilities arise from M&As (Agnihotri, 2013).

Consequently, being successful with typical growth approaches and common business concepts becomes more challenging during the crisis and might therefore not be an adequate response to a situation of recession. As opposed this ordinary approach, the establishment of new and innovative business services might be a key to competitive advantage of prosperous and sustainable market establishment (Lynch, 2013). Especially the service sector offers in Portugal big opportunities as in year 2014 it represented 75 % of GDP.[3]

3. Concise Introduction on Mergers and Acquisitions

This chapter will provide a concise introduction about the Portuguese M&A activity, then describe implications and related side effects of M&As, in a next step outline the different types of M&As and will close with the allocation of returns and gains of M&As. This will be an important fundamental for the understanding of the later analyzed takeover. Regarding this, in times of recession, the importance of M&As represents increasing opportunities for the economy, for instance, to capture new markets and to profit from less competition due to a merger with or an acquisition of a competitor, or to capture new markets and to profit from their human or natural resources (Achim, 2015).

[5] BMI Research (2015).

3.1 Mergers and Acquisition Activity and its Evolvement in Portugal

Research shows that mergers come in waves, and each wave differentiates itself in terms of industry configuration and the respective industry level shock (Mitchell and Mulherin, 1996 and Harford, 2005). The activity of mergers tends to cluster on a relatively small number of industries and is frequently driven by external factors, such as deregulation (creation of new investment opportunities, removal of artificially dispersed industries through merger barriers, clear breakdown in terms of time and affected parties) or by technology changes (for instance creation of excess capacity and the necessity of industry mergers), c.f. Kaplan, 2000 and Harford, 2005. Highest yields in efficiency increase can be achieved in industries with too many firms, each holding a small market share and large excess capacity can therefore, as opposed to the aforementioned external factors, be an internal triggering factor for M&A waves (Andrade, Mitchell and Stafford, 2001).

Figure 1 depicts the announced M&As in Portugal in number and value of transaction between 1991 and 2015 expected. One can identify two big waves of proclaimed M&As, one

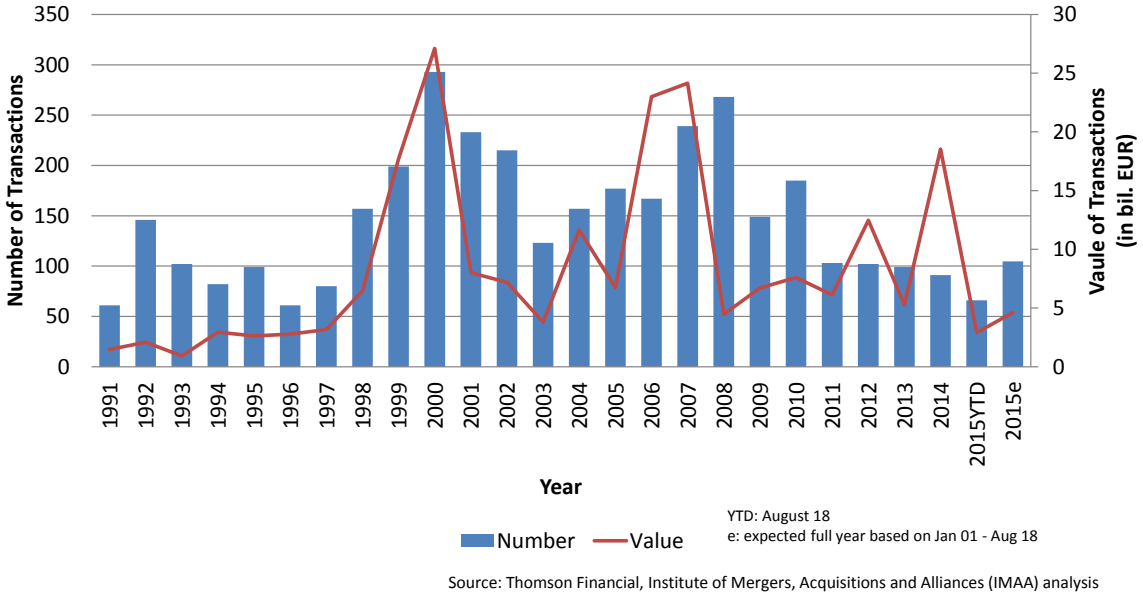

Figure 1: Announced Mergers & Acquisitions: Portugal 1991-2015e

in 2000 and another one in 2008. Foretime shows the number of transactions moves

proportionally in the same direction as the value of transaction, though, starting from 2011, the number of transactions remains stable until 2015e, but on a relatively slow activity level. This slow activity in M&As can be explained by the expected outcome from the recession, the economic and financial crisis and the limitations on growth resulting from the constraints imposed by the European Commission, the European Central Bank, and the International Monetary Fund (Memorandum of Understanding 17th May 2011). Though, tis memorandum let to some M&A activity in 2012, primarily pushed by divestments of state-owned or controlled enterprises and assets, for instance, the privatization of EDP – Energias de Portugal, SA and the airport operator ANA – Aeroportos de Portugal, SA. (Robinson and Zerdin, 2013).

Besides the above-mentioned reasons, the peak in 2012 of value in transactions is strengthened by the low interest rates and the therefrom-arising cheap debt (Achim, 2015). Additionally, the peak can be explained by the sale of state-owned stakes in Portuguese enterprises, inter alia from outstanding acquisitions, such as the acquisition of 80 % of the Portuguese insurer Caixa Seguros e Saude S.A. by the China-based Fosun International Ltd. (Wiese, 2014), the privatization of Empresa Geral de Fomento (Gonçalves, 2015) and the proceeding of the acquisition of PT Portugal by Altice that successfully closed in 2015 (Altice, 2015).

Nevertheless, those are mainly large and publicly listed firms and there is neither much data nor many researches available of smaller and private firms. Hence, this paper tries to assess the undertaken transaction of a small privately owned enterprise by a midsize consulting firm.

3.2 Implications of Mergers and Acquisitions with Related Side Effects

Mergers and acquisitions can create synergies, hence; they may add value if the two companies are worth more combined than apart (Brealey, Myers and Allen, 2007). Although, M&A activities create both significant advisory costs (lawyers, accountants, investment

banks, consultants) and internal costs (employees dealing with other than their usual daily operations, such as post-merger integration etc.) that need to be incorporated into the decision (Maire and Collerette, 2011). Those expenses are mostly offset by the benefits of a merger. The value added from a merger may reflect effects such as economies of scale, economies of vertical integration, improved efficiency, the combination of complementary resources, redeployment of surplus funds, or elimination of inefficiencies (Brealey, Myers and Allen, 2007). There are also contingent and dubious arguments for mergers like diversification, lower financing costs or increased earnings per share that need to be considered with precaution when taking into account for one's deal assessment. Thus, tax gains and the possibility of loss setoff might underline the attractiveness of a merger, especially conglomerates increase the usage of loss setoff among different divisions. After a successful acquisition, the complementary resources and product portfolios of both firms may pose new opportunities that neither company would pursue otherwise (Berk and DeMarzo, 2013).

3.3 Different Types of Mergers and Acquisitions

Rappaport and Sirower (1999) document that after expecting that the purchase of the target is a positive NPV project, meaning that the premium paid for the target exceeds the generated synergies, and after being confident that antitrust grounds are not posing any challenges, the next step is to evaluate the different forms of acquisitions. Brealey, Myers and Allen (2007) document that one way is to merge the two companies, in which case one firm incurs all the assets and all the liabilities of the target company. Such mergers need to have the approval of at least 50 % of the stockholders of each company but state laws may specify a higher percentage.

Another way is to buy the target's stock in exchange for cash, shares, or other securities. This approach for company purchase allows the buying company to individually deal with the shareholders of the target company and may totally neglect the target's management.

Although the cooperation usually is requested, if the buyer successfully acquired the majority and obtained the control, he can finalize the merger, and, if necessary, pitch out the current management. A third possibility is to buy some or all of the target's assets. In this case the ownership of the assets is transferred from the target to the buying firm, but the payment is made to the target company instead of directly paying to its stockholders (Brealey, Myers and Allen, 2007 and Rappaport and Sirower, 1999).

3.4 Allocation of Returns and Gains of Mergers

Andrade, Mitchell, and Stafford (2001) state that, the average three day abnormal return around the announcement of a bid for stock-financed takeovers, the target shareholders receive a remarkable gain averaging 16%. Nevertheless, it is also indicated that the stock prices of the acquiring companies decrease on average (Moeller, Schlingemann, and Stulz, 2004). This is affirmed by the average three-day abnormal return for the acquiring firm of -0.7% (Andrade, Mitchell, and Stafford 2001). The combined value of the merging companies increases on average by about 2%. Hence, the merging companies are, on average, worth more combined than apart. In other words, especially at the announcement of a merger, the target firm shareholders are better off than the acquiring firm shareholders (Jarrell, Brickley and Netter, 1988). One explanation why firms undertake acquisitions, although they often spoil value, might be that managers are overconfident about their outstanding ability to run the target better than the incumbent management. Another explanation might be that companies can enter a market only by setting up a new business or acquiring an existing one. In a stagnant market it only makes sense to grow a business by acquisition. Consequently, the announcement of an acquisition literally causes a decrease in value, since investors conclude that the state of the market is stagnant; in this case does not destroy value (McCardle and Viswanathan, 1994).

There are two reasons why target firms gain most. First, in many mergers the acquiring firms are much bigger than the target firm. Consequently, even substantial net benefits barely show up in the acquirer's share price. Second, and more importantly, the rivalry among bidding firms has to be mentioned. Once the first bid is made, additional bidders that join the process, sometimes as white knight incited from the target's management, push up the purchase price. Thus, the incumbent management of the target tries to boost the price at the highest attainable through various financial and legal counterattacks (Brealey, Myers and Allen, 2007).

The complexities that need to be considered for a successful takeover, as well as the different types are, as seen above, not evident at first glance. Therefore, the following chapter will show methods to assess the transaction with a fair value.

4. Classical DCF Valuation Methods

Since the expected income streams are uncertain, but still need to be adjusted for risk, one challenge is to work out a valuation technique that incorporates all environmental factors, influencing the current value of uncertain future income streams. Most prevalent ones are the discounted cash flow (DCF) models that discount future cash flows at constant discount rates, including adjustments for risk; hence, risk is incorporated into the denominator (Ballwieser, 2011). This section briefly outlines these methods.

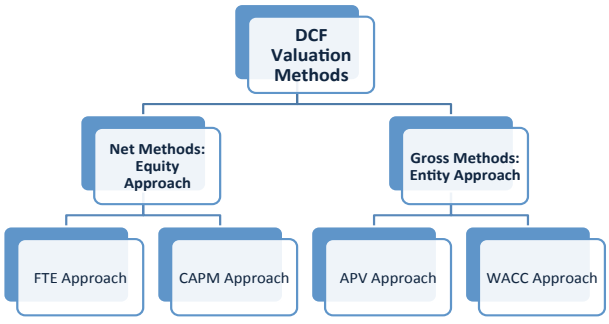

Figure 1: DCF Valuation Method

These approaches identify the shareholder value as equity market value by discounting future cash flows (CF). The methods differ regarding discount rates, CFs and capital structure. Classical DCF-methods are subdivided into entity and equity approaches and their differences are briefly discussed in this chapter (see Figure 1). However, making the

same assumptions about an investor's future financing behavior (i.e. debt ratio) both approaches will lead to the same results. Hence, a main distinction is the different incorporation of debt. (c.f. Schneider and Thielen, 2012).

4.1 DCF Gross Methods: Entity Approach

Especially in an international context, the entity approach is the most common method in accounting valuation and therefore provides high statistical information content (Bilych, 2013). This approach primarily determines the whole capital value, i.e. the value of debt plus equity and in a second step deducts the debt value. The result reveals the market equity value. (c.f. Ballwieser, 2011).

While this paper, in accordance with Peermöller (2008) differentiates between the weighted average cost of capital (WACC) method and the adjusted present value (APV) method, some definitions consider the APV approach as a co-category and not as a subcomponent of the entity approach.

4.1.1 WACC Approach

The weighted average cost of capital (WACC) can be used to value a company's assets and operations that are financed through both, debt and equity. WACC assumes a constant business risk and debt ratio. There are two alternatives to apply the WACC approach; taking into account the free cash flow (FCF) and the total cash flow (TCF). FCF is based on miscalculated tax payments, as tax shields are neglected despite the deductibility of interest expenses of borrowings, i.e. assuming all equity financing. The resulting mistake is later adjusted by after-tax cost of debt (Ballwieser, 2011). Using TCF, the tax shield is directly considered and therefore no adjustment is required:

(1) $$WACC = r_D(1 - T_C)\frac{D}{V} + r_E\frac{E}{V},$$

Here the total market value of the company is given by V= D+E, D and E are debt and equity respectively, r_D and r_E are the cost of debt and equity, and T_C denotes the marginal corporate tax rate (Brealey, Myers and Allen, 2007).

4.1.2 APV Approach

The adjusted present value (APV) method first calculates – similar to WACC – the whole value of the company, assuming an all-equity financed venture. APV does not consider tax or other financing effects in the adjusted discount rate, hence, as it is separately outlined it offers more transparency in terms of financing treatments (Luehrman, 1997). Therefore, a base-case value is calculated where the discount rate equals the opportunity cost of capital. Subsequently, the present value of financing side effects are added, i.e. the present values of costs and benefits to the company like tax shields on debt or costs of financial distress associated to the firm's leverage (Luehrman, 1997):

(2) $APV = base\ case\ NPV + sum\ of\ financing\ side\ effects$[6]

4.2 DCF Net Methods: Equity Approach

Unlike the entity approach, the equity approach directly determines the value of equity and uses the cash flows after interest and taxes for both, the Flow to Equity and CAPM methods.

4.2.1 Flow to Equity

The FTE-method discounts the cash flows to equity after interest and taxes at the cost of equity capital through which it conforms to the earnings-capacity method. As long as the company's debt ratio stays constant, FTE-method yields the same result as the WACC method. Therefore, American literature often advises to use CAPM when incorporating risk. (C.f. Ballwieser, 2011).

[6] Brealey, Myers and Allen (2007).

4.2.2 Risk Markup with CAPM

The capital asset pricing model (CAPM) is a standard approach to value risky securities and portfolios since it explains the relationship between risk and expected return (Brealey, Myers and Allen, 2007). It assumes that the cost of equity is determined by the return of a risk free return plus a risk premium. The risk premium is calculated as the product of market risk premium and a company-specific beta factor. In this case, beta measures the volatility, or the systematic risk of a security or portfolio in comparison to the market. The expected risk premium should increase in proportion to its beta. The equation of the cost of equity is given by:

$$(3) \qquad r = r_f + \beta\,(r_m - r_f)$$

Where r_f denotes the risk free rate, β the beta of the security and r_m the expected market return. Hence, $r_m - r_f$ defines the risk premium (Brealey, Myers and Allen, 2007).

For this valuation purpose, which will be explained in the following chapter, the WACC approach - as it is widely used in practice (Schüppel, 2015) - is used whereby the cost of equity is calculated by applying the CAPM method.

5. Case Valuation: Analysis of the Parties Involved

The purpose of this part is to lead over from the theoretical background to a practical case in which a HR consulting firm intends to acquire a training enterprise that is also significantly involved in a small marketing bureau. Therefore, this chapter presents the overall conditions of the involved parties and the respective relationships enabling to precisely assess the offer made by HR Company. Firstly, section 5.1 compendiously outlines the target Training Company (TC) and since the focus is on the valuation of TC, its financial historical and future position is further analyzed in the sub-sections 5.1.1 and 5.1.2, respectively. Secondly, section

5.2 presents the Marketing Company and its interconnections with TC. Thirdly, in section 5.3 the acquiring enterprise HR Company is specified and chapter 5 will end in section 5.4 with a discussion about the transaction in order to discuss the possible options of the transaction.

To attain a broader consultancy portfolio the acquirer HR Company strives to expand its human resource consultancy business with the acquisition of a new enterprise and therefore decides to buy the innovative TC. In order to do so, HR Company values the target company and then approaches the owners of TC with an offer (Custódio, 2015).

5.1 Training Company (The Target)

Unique, immersive and persistent are the three core objectives of the target company's corporate culture that serves big multinationals for more than 10 years (Immersis, 2015); nevertheless, the firm still shows characteristics of a start-up, which will be outlined in detail in the following chapters. This enterprise is owned by three partners. The main stakeholder of TC is Joao with a 40 % share; the residual 60 % are equally split between Luis and Carlos by 30 %, respectively. The founders Luis, Joao and Carlos aimed to create an innovative business model that offers its clients a completely customized employee training, focusing in detail on its customer's professional qualification needs (Custódio, 2015). For instance, in a training program, the trainees had to instruct and help a blind person driving a car. They had to provide the blind person with clear instructions to start the car, and then to perform a set of basic maneuvers such as go forward, backwards, turning left or turning right. This is quite a thought for someone that cannot drive and cannot see! To help visually impaired people to do something that common people take from granted can be extremely challenging but at the same time very rewarding (Immersis, 2015).

Based on this peculiar customized product portfolio TC aims at enlarging and strengthening its competitive advantage by attracting well-established customers with high potentials of sustainable and long-lasting customer retention.

5.1.1 Historical Development

During the fiscal years 2011 to 2014, the sales showed an upward trend, though, the development does not follow a constant growth pattern and are highly volatile. In 2012, sales increased by almost 69 %, decreased in the following year by 1.3 % and in 2014 grew by more than 23 %. Throughout the past, the company was always able to generate a positive EBIT. Between 2011 and 2013, the EBIT margin (in relation to sales) remained quite stable, ranging between 22.4 % and 22.7 %. A sharp decrease in EBIT profitability occurred in year 2014, where the margin amounted only to 8 % (see Figure 2 and Appendix Table 4). This deterioration can be explained by an extraordinary increase in external service costs, probably due to the upcoming transaction costs or the huge expected increase in revenues for year 2015 that requires pre-arrangements (for more precise explanation, the consultation of the management is required). Between 2011 and 2013, external service costs represented on average around 54% of sales, while in year 2014 they constituted to more than 72 % (see Appendix Table 4).

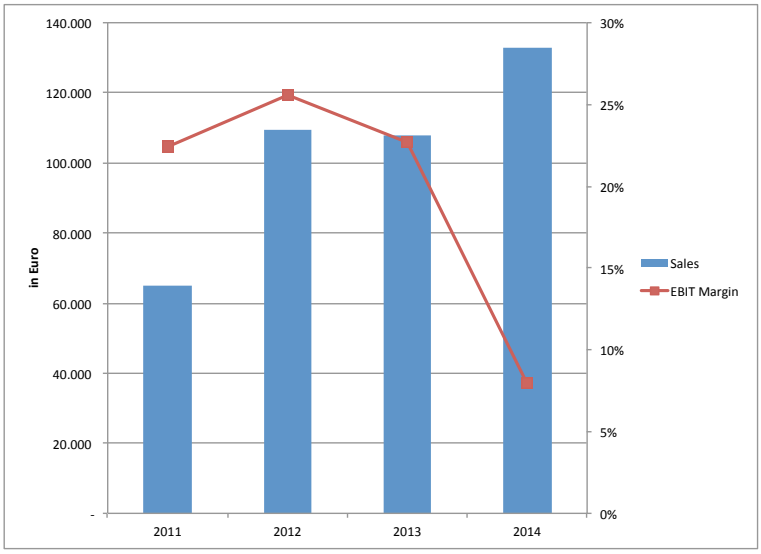

Figure 2: Historical Evolution of Sales and EBIT margin

It might be reasonable to justify the volatility of sales by a lack of experience and market establishment. The small enterprise focuses on an increase in market knowledge and enterprise awareness. Therefore, it faces fluctuations of capacity utilization. This is further intensified by the challenging circumstances of the Portuguese economic situation.

Unfortunately, due to the lack of management information, the explanations made remain on assumption-basis.

The data placed at the disposal defines changes in working capital (WC) as the sum of inventory plus receivables, namely debtors, minus payables, namely creditors (see Table 1, and Appendix Table 8). This outlines the net investments in short-term assets; therefore, a positive WC position implies that the firm is able to meet its current liabilities with its current assets before they become due. An increase in WC represents an investment, thus, lowers the cash available to the firm and so reduces the FCF (Brealey, Myers and Allen, 2007).

in Euro	2011	2012	2013	2014
Inventory	-	-	-	-
Customers	48.548	137.035	197.589	-
Others	339	678	(58)	(6.945)
Debtors	48.887	137.713	197.531	(6.945)
Debtors margin	*75,48%*	*125,87%*	*182,90%*	*-5,22%*
Suppliers	(189)	(1.263)	(31.980)	-
Workforce	(1.390)	(35.029)	(53.695)	(8.809)
Government	9.445	24.131	6.350	10.780
Loans	(5.000)	(33.275)	(51.260)	(39.643)
Shareholders	-	(2.500)	(6.500)	(6.500)
Creditors	2.866	(47.936)	(137.085)	(44.172)
Creditors margin	*4,42%*	*-43,81%*	*-126,93%*	*-33,22%*
Working Capital	**51.753**	**89.777**	**60.446**	**(51.117)**
Working Capital in % of Sales	*79,90%*	*82,05%*	*55,97%*	*-38,44%*
Changes in WC	**51.753**	**38.024**	**(29.331)**	**(111.563)**

Table 1: Historical amounts of Working Capital

As seen in Table 5, the spreadsheet provided by the target's management illustrates an extremely high and volatile working capital margin (in % of sales), starting with a margin of 79,9 % in year 2011 and a negative margin of -38,4 % in year 2014 (see Appendix Table 3). The high margin levels of WC can be used to evaluate the ability of the company to grow quickly, which supports the assumption of the target's growth potential and start-up characteristics. Having substantial cash reserves may therefore imply the availability of enough cash to quickly scale up the business. Reversed, with regard to the business' financial means, a remote net WC situation impedes an enterprise the ability of accelerated growth rates (Schüppel, 2015). By having a look at the average working capital margin of the firm's peer group amounting to 4,68 % (see Appendix Table 6), the huge margin levels and volatility of TC demand for further consultation of the management.

5.1.2 Future Expectations

As opposed to the volatile sales course and EBIT margin (in % of sales) in the past, the sales are expected to mature and follow a smooth upward trend. For 2015, the expected sales growth rate is 114,3 % and can be explained by boosting synergy effects, publicity increase and economies of scale due to the transaction that took place in July 2015. In 2016, the expected sales growth rate is 8 % and from the years 2017 to 2020 7,5 %, respectively. The expected evolution of the EBIT margin is consistent with the evolution of sales growth. In year 2015, an enhancement of the EBIT margin of 46,1% is expected, followed by an average EBIT margin of 42,7% for the years 2016 to 2020 (see Figure 3 and Appendix Table 4).

Prior to the transaction, the company was levered and burdened debt financing. Those financing cost are not considered in the future projections and contribute to the enhancement of the firm's net operating profit after tax (NOPAT) margin (in % of sales). The margin increased from 13 % on average during year 2011 and 2014, to 34,3 % on average between year 2015 and 2020. This expected improvement poses an optimistic incentive, though the merger brings cost savings and enhanced efficiency along. Therefore, this target is reachable.

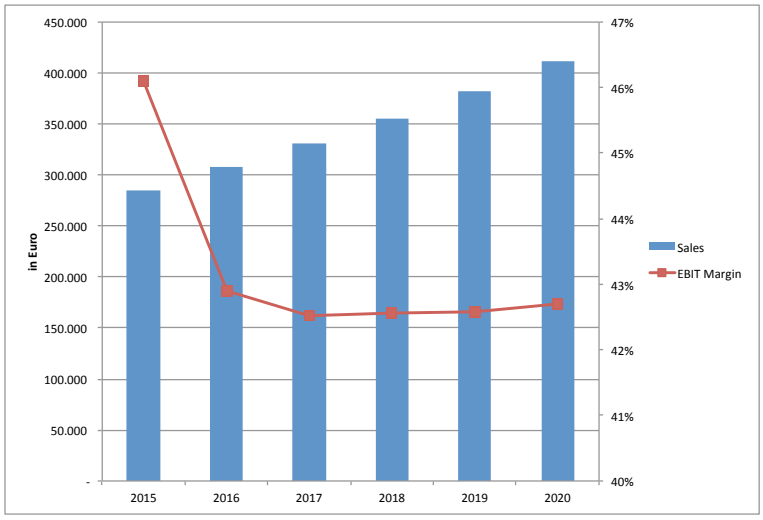

Figure 3: Forecasted Development of Sales and EBIT margin

Projections about the future evolvement of WC requirements are completely omitted in the available input data. Due to the lack of a balance sheet, it is either possible to define the future evolvement by using a historical average of the firm, or by taking the average of the peer group forecast. Based on the historical high amounts and volatility of TC's working capital,

the average of debtors' and creditors' margin of the years 2011 to 2014 was used to project the future net WC requirements for the years 2015 to 2020 and therefore are estimated at 44,9% of sales (see Appendix Table 4).

5.2 Marketing Company

Marketing Company (MC) is a small Portuguese marketing research firm, which was found in year 2000 and specialized in the field of four main business lines. Firstly, MC focuses on qualitative research, on quantitative research supported by modern IT, on ethnography and mystery shopping (IMR - Instituto de Marketing Research, 2015).

Two founders of TC, Luis and Joao, own Marketing Company. Though, Joao owns the majority of 80 % of MC, he is not involved in the day-to-day business and therefore contributes no human capital to the agency. Luis holds the residual 20 % of the firm and additively has a part-time position as a research advisor at MC (Custódio, 2015).

5.3 HR Company (The Acquirer)

Responding to the fact that human capital's importance increases as a factor in successful business performance (Cooper and Saridakis, 2013), HR Company was created 10 years ago with a clear focus on this particular aspect. The founders built a firm focusing on the belief that employees, finding themselves in a state of professional and personal well-being, would be more motivated and perform better over a longer period of time (Cooper and Saridakis, 2013). This led to a new approach called Human Experience Design (HED), which focuses on developing solutions with defined objectives to promote business competitiveness through people. Therefore, it is crucial to ensure an engagement culture in which the best-recruited employees have the ability and responsibility to address the main organizational challenges related to people with long lasting impacts (Jason Associates, 2015).

In order to expand the service portfolio based on the HR Company philosophy, the management aimed to acquire TC, since the business areas complement each other well.

5.4 Discussion about the Process of the Transaction

Due to the strong performance and operational excellence with concurrent and steady growth of revenues during the last years, HR Company aimed to acquire Training Company. At first, HR Company approached to acquire the TC entirely and hire the three stakeholders, Luis, Joao and Carlos, to start working part-time for HR Company. This would enable Luis, Joao and Carlos to continue working for MC and keep this business running (Custódio, 2015).

Thus, HR Company proposed to acquire TC entirely, but additionally hire the three stakeholders full-time for HR Company, instead of only part-time. When hiring the founders of TC for 100 % at HR Company, it would not be possible for them to further work for MC. Resulting in an omission of the salary from MC that needs to be compensated by HR Company. Therefore, In order to make it a profitable deal for every party involved, there are multiple aspects and options that need to be considered and examined (Custódio, 2015). Due to the lack of sufficient input data (only an income statement and the calculations of the valuation of TC are available), the best outcome, unfortunately, cannot be determined and this paper will focus on the valuation of TC by further neglecting any other possible outcomes.

6. Case Valuation: Determining the Target's Value

After having an overview of the underlying economic situation and the corresponding theoretical foundations from the aforementioned chapters, this chapter has the purpose to give a rough estimation of a fair value of TC by taking into account all the previously mentioned determining factors. In the first step, a description of the incorporated determinants of the terminal value is outlined and section 6.2 will then resume with the approximated value of the

target as of 31 December 2014. The section will close with a scenario analysis and the associated discrepancy in value determination.

6.1 Terminal Value Determination of the target

As opposed to the detailed annual FCF planning phase for the years 2015 to 2020, the CFs accruing after this period are derived by incorporating less detailed assumptions and are included in the terminal value (Damodaran, 1996). In order to calculate the terminal value from year 2021 onwards, a sustainable annual growth rate of 1,10 % (see Appendix Table 3) for sales was defined, according to an expert reference of Schüppel (2015). This assumption is based on the expected long-term inflation rate and the on average achievable, long-term growth rate of the economy and should also be in line with GDP growth (Schüppel, 2015). Therefore, for the fiscal years 2021 onwards, a result is set that can - on average - assumed to be achievable and sustainable for the long-term perspective. It is of major importance to define a terminal value based on realistic and fair assumptions, as it makes up more than 70 % of the overall company value.

From year 2021 onwards, the EBITDA in % of sales is estimated by a weighted average of the historical margin and the average of the firm's peer group[7] margin of the years 2011 and 2016 (where 2015 and 2016 are expected values). This assumption was made to adapt a compromise between the firm's historical performance and the peer group performance.

Since the depreciation margin of the enterprise is hardly traceable throughout the past and the future expectations, the depreciation margin, and therefore the capital expenditures as well (of the years 2021 onwards), was set equal to the average depreciation rate of TC's peer group of the years 2011 to 2014, amounting to 6.703 €. This amount represents the average yearly

[7] A peer group consists of quoted enterprises, usually companies with similar standard industry classifications (SIC). See Liu et al. (2002, 2007).

value that needs to be invested in the firm's assets, in order to maintain the enterprise sustainable in a steady state (Brealey, Myers and Allen, 2007).

6.2 Valuation of Training Company

For the valuation process of Training Company the WACC approach was applied. As mentioned above, a key assumption according to the WACC method is a constant debt-to-equity ratio. From year 2016 onwards, the target firm assumes TC to be all equity financed. The transfer of all financing issues to the mother company, namely HR Company, might explain this assumption and hence, this paper applies a zero-debt capital structure (see Table 2).

The associated cost of equity was estimated by using the aforementioned CAPM approach. The risk-free rate of 0,18 % is derived by the yearly historical mean of US T-Bills between year 2010 and 2014. The corresponding market return of 7,55% is derived by the yearly historical return of MSCI World Index between year 2010 and 2014 (see Appendix Table 10).

WACC (Weighted Average Cost of Capital)	Assuming zero debt
D/E	0,00%
D/A	0,00%
E/A	100,00%
Riskfree rate	0,18%
Equity beta	0,878
Market return (MSCI World)	7,55%
Risk premium (Rm-Rf)	7,38%
Cost of equity	6,65%
Corporate income tax rate (IRC)	20,50%
Pre-tax cost of debt	6,81%
After-tax cost of debt	5,42%
WACC	**6,65%**
Growth rate	1,10%
Discount rate terminal value	**5,55%**

Table 2: Estimation of target's of cost of capital

In order to estimate the appropriate beta factor, the respective company-specific betas of the firm's peer group were unlevered, and in the next step the median of the unlevered betas are re-levered with the company-specific capital structure (zero-debt). Hence, as seen in Table 2, the equity beta is used for TC's discount rate determination. The median beta was used regarding the fact that it is less affected by dispersion of extreme values than the mean (Rubin and Smith, 1958). This resulted in an equity beta of 0,878 meaning the volatility is supposed to be less volatile than the market (see Appendix Table 2).

Overall, the cost of equity is estimated as the following:

(4) $r_E = 0,18\ \% + 0,878\ (7,55\% - 0,18\%) = \mathbf{6,65\ \%}$.

For the determination of the cost of debt the book value of debt is considered as a justifiable approximation, as the deviation to the market value is negligible (Schüppel, 2015). In combination of an implied corporate marginal tax rate of 20,50 % the after-tax cost of debt estimation amounts to:

(5) $r_D = 6,81\ \% * (1 - 20,50\%) = \mathbf{5,42\%}$.

Resulting from the previously defined gearing ratio of zero debt, the cost of equity and the cost of debt, the WACC is determined as the following (see Table 2):

(6) $r_{WACC} = 6,65\ \% * 100,00\% + 5,42\% * 0,00\% = \mathbf{6,65\%}$.

in Euro	2015	2016	2017	2018	2019	2020	TV
Free Cash Flow	(68.779)	92.872	99.971	108.282	117.104	126.312	72.991
PV	(64.488)	81.645	82.404	83.686	84.858	85.820	892.973

		EV/EBITDA	*EV/EBIT*
Enterprise Value 2015, as of 31.12.14	**1.246.899**	9,05 x	9,49 x

Table 3: Enterprise value derived by discounting of projected cash flows; Enterprise multiples

Having the discount rate of 6,65 %, the projected FCFs for the years 2015 to 2020 and the terminal value (see Table 3), the inferred enterprise value estimation of Training Company as of 31 December 2014 amounts to 1.264.899 € (see Table 3 and Appendix Table 2).

Furthermore, a trading multiple valuation was conducted. For this approach, the relationship between the enterprise and equity value to the firm's fundamental data is calculated; common trading multiples are, inter alia, EV / EBITDA and EV / EBIT.[8] The calculations result in an EV/EBITDA multiple in year 2015 of 9,05 x and an EV/EBIT multiple of 9,49 x (see Table 3 and Appendix Table 2). The median of the peer multiples was conducted and revealed for

[8] Liu et al. (2002, 2007).
Those ratios provide a sound approximation of the target's enterprise value, though they do not incorporate, as the transaction multiples, the majority premiums that are paid when acquiring the majority stake of the target. Therefore, the actual transaction value tends to be higher than the trading multiple.

year 2015 an EV/EBITDA multiple of 8,79 x and an EV/EBIT multiple of 10,25 x (see Appendix Table 6).

Although, TC's EV/EBITDA multiple is slightly above its peer median, it is still feasible and justifiable by its new and innovative product portfolio, the associated competitive advantage and the disregard of the majority premium (see footnote 8). Thus, the EV/EBIT multiple is lower than the peer median (difference in depreciation). Consequently, the feasibility of TC's value inferred from the WACC is substantiated by the trading multiple valuation.

6.3 Scenario Analysis

In order to reflect the optimistic future expectations of the provided income statement, this part illustrates how the enterprise value is differing with respect to changing growth

in Euro	2015	2016	2017	2018	2019	2020	TV
Szenario Free Cash Flow	*(49.044)*	*9.142*	*9.986*	*10.909*	*11.917*	*13.019*	*17.571*
PV	*(45.984)*	*8.037*	*8.232*	*8.431*	*8.636*	*8.845*	*214.961*

		EV/EBITDA	*EV/EBIT*
Szenario Enterprise Value 2015, as of 31.12.14	***211.157***	1,53 x	1,61 x

Table 4: Scenario enterprise value derived by discounting of projected cash flows; Scenario enterprise multiples

assumptions and margins. Hence, this offers an illustration of the variability of the enterprise value. Therefore, instead of using the specific growth rates (that are provided by the management) for every income statement position, the conducted scenario analysis was applied by assuming an annual growth rate aligned to the average sales growth rate of the enterprise's peer group between the years 2011 and 2016. Aligned to that, the same average assumptions were made for the EBITDA margin and the respective depreciation margin. In the next step, the EBIT and NOPAT were calculated. As previously seen, the company's WC requirements are surprisingly high; therefore, the scenario analysis also compromises the average working capital requirements of the peers of the years 2011 to 2014. Table 4 depicts the FCF outcomes in comparison to the initial assumptions.

By using the same discount rate and capital structure the enterprise value as of 31st December 2014 amounts to 211.157 € (see Table 5). This divergence in enterprise value is extreme. The

respective EV/ EBITDA multiple of 1,53 x and EV/EBIT multiple of 1,61 x for year 2015 is furthermore way below the peer median. With regard to the innovativeness and start-up characteristics of TC, especially by comparing the multiples, the initial future assumptions seem to be more appropriate and applicable than the scenario analysis result.

Although the scenario analysis derives a much lower enterprise value, the provided input data still outlines a much lower value estimate amounting to only 16.458 € (see Appendix Table 9). That TC is by far underpriced should be obvious and poses skepticism about the acquisition price paid by HR Company for TC. Therefore, the following chapter tries to reveal the valuation stumbling blocks of the underlying input data.

7. Critical Evaluation of Provided Input Data

This section briefly outlines the main imperfections on which the initial information input and its subsequent valuation shortcomings are based on. First, the section 7.1 Cash Flow Analysis discusses stumbling blocks in the CF calculation. The proceeds of those mistakes provide the incorrect basis and will further influence the valuation result. This will be presented in the subsequent section 7.2 Valuation Analysis.

7.1 Cash Flow Analysis

As is generally known, there are crucial differences between net income and net operating profit after tax (NOPAT). While NOPAT is the company's after-tax profit and not the actual net income, NOPAT is a construction that illustrates the after-tax profit that the company would have earned if it would be unlevered (Stewart, 1991). Hence, the inclusion of financing gains and losses, as it was conducted in the input data, is not correct.

Due to the application of the WACC and as mentioned earlier, a FCF needs to be determined and then discounted. Therefore, in accordance with the seminal paper of Jensen (1986), the

FCF is defined as “cash flow in excess of that required to fund all projects that have positive net present value when discounted at the relevant cost of capital.” Consequently, in the finance literature the FCF is calculated by FCF = unlevered net income + depreciation - capital expenditures - increases in Net Working Capital (Damodaran, 1996).

Nevertheless, the input spreadsheet calculates an annual cash flow by merely adding changes in WC to net income (misleadingly titled as NOPAT) and an operating cash flow by adding depreciation back to net income (misleadingly titled as NOPAT; see Appendix Table 8). In the absence of a CF calculation that adjusts the NOPAT for both, depreciation and changes in WC, poor quality of input data impedes the potential for proper valuations. However, the operating cash flow with the adjustment for depreciation was used as valuation fundamental.

Furthermore, the available income statement only displays for year 2011 to 2014 the changes in WC and not the actual amounts. The omission of the WC forecast is a further shortcoming of a reliable CF calculation (see Appendix Table 7). The unavailability of a balance sheet poses an additional challenge on a reasonable anticipation of future WC requirements.

Ass seen, the general structure of the CF calculation, provided by the management of the company, shows numerous questionable issues and stumbling blocks. Hence, inaccuracies of CF calculations pass through the valuation process and result in a undervaluation of TC.

7.2 Valuation Analysis

As discussed in chapter 4, a firm’s cost of capital is the rate of return that an investor requires on a portfolio of all of the firm’s debt and equity and calculated as the weighted average of the after-tax cost of debt and the cost of equity. The cost of debt is defined after-tax, as interest is a tax-deductible expense. The input data spreadsheet, though, instead of multiplying the weight of cost of debt by one minus the marginal tax rate, the weight of cost of debt is multiplied by the marginal tax rate. This results in a WACC amounting to 3,3 %,

instead of 4,7 % when calculated properly (see Appendix Table 9). Thus, a lower discount rate, i.e. a lower denominator, leads to a higher present value of the CF.

Moreover, the determination of the enterprise value of year 2014 and 2015 is calculated by subtracting an initial investment and supply value amounting to 41.000 € (no information available where this amount comes from) and adding the compounded operating cash flows of the years 2011 to 2014 and 2015, respectively (see Appendix Table 9). Prevalently, applying the Discounted Free Cash Flow Model and discounting future FCFs of the company is used for the estimation of a firm's current value, instead of compounding historical CFs, as applied in the provided data. This is seen as more appropriate and applicable as the expected future cash in- and outflows, thus, the expected internal and external evolvement of the economic situation of the company is considered for the valuation and not the past historical values (Berk and DeMarzo, 2013). Furthermore, due to the incorporation of historical values, the old capital structure with a D/E ratio of 48,65 % is used and hence, poses an additional conflict with the assumption of an expected all-equity financed firm. The large increase in enterprise value from 2014 amounting to 16.458 € to 107.800€ in 2015 can be traced back to the increase in sales of 114,30 % from 2014 to 2015.

The composition of the incorrect discount rate, the incorrect determination of the cash flow as a discount base and the incorrect approach of cash flow discounting result in a completely inaccurate enterprise value.

8. Conclusion

This paper outlined the evolvement of M&As in Portugal and provided a brief overview of the theoretical background. In addition, different valuation methods were presented prior to the illustration and the analysis of the target firm, its associated stakes and the acquiring firm. The aim of the underlying paper was to evaluate the enterprise value of TC, based on the

provided income statement and in a next step to critically discuss the valuation made by the acquirer. With respect to the limitations mainly based on the missing balance sheet and management information about underlying assumptions, this paper computed an enterprise value estimate of TC as of December 31st 2014 of 1.264k €. This value is primarily based on the forecast of the target's management and therefore, may vary especially with the high levels of WC requirements and an extreme increase in sales growth in year 2015. The trading multiple valuation was used to check the plausibility by comparing the expected median multiples of TC's peers for year 2015 (EV/EBITDA = 8,79 x and EV/EBIT = 10,25 x) with those of TC (EV/EBITDA = 9,05 x and EV/EBIT = 9,49 x). This method substantiates the value obtained by applying the WACC and consequently the enterprise value can be regarded as a fair estimate. Thus, it strengthens the fact that the value computed by the management is too low and the acquisition was a disadvantageous deal for TC's owners. Even the scenario analysis that incorporates much lower growth rates reveals a value of 211.157 € and is still much higher than the value determined by the management (amounting to 16.459 €). This divergence in company value is mainly due to wrong CF and discount rate calculations. Even though the management applied the same valuation method – namely the WACC – historical CFs were compounded to the valuation date, instead of discounting future CFs.

This paper pointed out how a firm's value varies with changing assumptions and revealed with an acquisition example the implications of imperfections in valuations by outlining stumbling blocks made in practice. Nevertheless, having in mind the always positive NOPAT throughout the past and the fact that TC mainly consists of human capital (as it is a service company), it remains questionable that the extreme underpricing of Training Company was not further verified and re-assed by the owners before HC Company acquired TC.[9]

[9] The author has no information about the price paid for TC and the associated deal terms and conditions.

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